



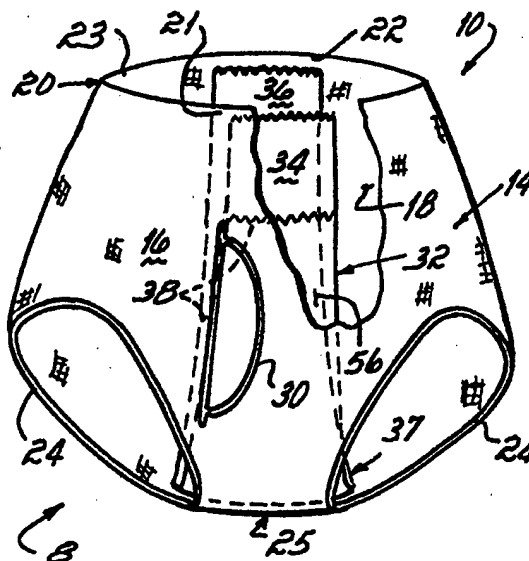
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/US98/26131</p> <p>(22) International Filing Date: 9 December 1998 (09.12.98)</p> <p>(30) Priority Data: 60/070,125 31 December 1997 (31.12.97) US</p> <p>(71) Applicant (for all designated States except US): INTELLITECS INTERNATIONAL, INC. [US/US]; Suite 430, 5412 Courtview Drive, Mason, OH 45040 (US).</p> <p>(72) Inventor; and</p> <p>(75) Inventor/Applicant (for US only): CONWAY, David, W. [US/US]; 6546 Heritage Club Drive, Mason, OH 45040 (US).</p> <p>(74) Agents: GROSSMAN, Kurt, L. et al.; Wood, Herron &amp; Evans, L.L.P., 2700 Carew Tower, Cincinnati, OH 45202 (US).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report.</p>

(54) Title: CHILD'S ENURESIS UNDERGARMENT

## (57) Abstract

A child's enuresis undergarment (8) includes an undergarment body portion (14) having a self-adjusting support (32) connected to the undergarment front and back waist areas (21, 22). The self-adjusting support (32) has a front elasticized panel (34), a back elasticized panel (36), and a fluid-resistant, discharge-receiving panel (37) therebetween, the discharge-receiving panel (37) capable of receiving an absorbent pad (52). In use, the discharge-receiving panel (37) and pad (52) are positioned in close, confronting relationship with a child's external genitalia (90, 92), thereby absorbing and retaining urine from an enuretic void or voids, and reducing the possibility of urine soiling the undergarment body portion (14), outer clothing, and/or bedding. If desired, the front and back elasticized panels (34, 36) may be sized and/or positioned within the undergarment (8) so as to locate the discharge-receiving panel (37) centrally in the crotch area (25) of a girl's panty (12) or forwardly in the crotch area (25) of a boy's brief (10).



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**CHILD'S ENURESIS UNDERGARMENT****Background of the Invention****Field of the Invention**

5           The present invention relates to children's undergarments, for example, a girl's panty or a boy's brief, and more particularly, to such undergarments having a feature or features on the body-facing side of the undergarment which assist in collecting and/or absorbing urinary voids.

**Description of The Related Art**

10           Many children throughout the world suffer from a form of urinary incontinence known as enuresis, which refers to the involuntary discharge of urine after the age by which a child's bladder control should have been established. Most typically, a child develops voluntary control of urination by the age of five. However, there is a substantial population for which this is not the case. For

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example, nocturnal enuresis, typically referred to as "bed wetting", generally is present in about ten percent of otherwise healthy five-year-old children, and in about one percent of otherwise healthy children at age fifteen. *Tabor's Cyclopedic Medical Dictionary*, Ed. 17, page 653, © 1993 F.A. Davis Co. In fact, in the United States alone, there are approximately 1.6 billion bed wettings per year. Moreover, enuresis is not limited to urinary incontinence which occurs during the night time. Many children experience urinary incontinence during the day, a condition known as diurnal enuresis. *Id. at page 653.*

In the vast majority of cases, there is no organic basis for persistent enuresis. While toilet training may play a role in many cases, emotional stress, such as the birth of a sibling, a death in the family, or separation from the family, may be associated with the onset of enuresis in a previously continent child. *Id. at page 653.*

Enuresis also may be caused by disease or injury, and depending upon the particular disease or injury, this urinary incontinence may be a long-term condition. Some of the conditions that may cause enuresis include urinary tract infection, increased fluid intake due to diabetes mellitus, any disease that interferes with the formation of concentrated urine, trauma to or disease of the spinal cord, and epilepsy. Disease usually also plays a role in the development of day-time urinary incontinence, with this condition also persisting for long periods of time, especially after a protracted illness. The day-time discharges themselves may be

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caused by muscular contractions brought about by laughing, coughing, or crying.

*Id. at page 653.*

Beyond the clinical aspects of this form of urinary incontinence, the condition typically has a significantly negative impact on a child's self-esteem.

5 And although a loss of self-esteem is undesirable in general, it is particularly undesirable in childhood, a time which is extremely important in developing a person's sense of self-confidence and self-esteem. For example, a child may be embarrassed by his or her lack of bladder control, and therefore, may be reluctant to participate in a full range of activities, for fear of embarrassment or lack of  
10 acceptance. For example, if the child is a bed wetter, he or she may be reluctant to go to a slumber party. Alternatively, if the child has day-time incontinence, he or she may be reluctant to play with friends, or even to attend school.

Given the substantial number of children with enuresis, the sizable number of involuntary urinary voids experienced by these children, and the  
15 reduction in self-esteem which typically accompanies this condition, it is extremely important to assist the child in any way possible. One such form of assistance has been to provide a pad which may be placed in a child's undergarment for receiving an enuretic void. This pad is quite long so that it may cover the external genitalia of either a girl or a boy, and the pad is relatively thick as well. These features result  
20 in a pad which is bulky and uncomfortable, and which also has a tendency to move out of position within the undergarment, thereby reducing, and in some cases preventing, any benefit, either when used during the nighttime or during the day.

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Moreover, because the pad is relatively bulky and slides around, and because the pad may not effectively capture the void, a child is still likely to soil his or her bed or clothing.

### **Summary of the Invention**

5                   The present invention overcomes the above-mentioned drawbacks by providing an undergarment having a free-floating, self-adjusting support inside the undergarment body. The self-adjusting support includes a front elasticized panel, a back elasticized panel, and a discharge-receiving panel therebetween, with the discharge-receiving panel adapted to receive an absorbent pad. The front panel  
10                   is connected to the front waist area of the undergarment, and the back panel is connected to the back waist area, such that the discharge-receiving panel floats within the undergarment. This design results in a child's undergarment in which the discharge-receiving panel, and, if desired, a pad received on the discharge-receiving panel, are positioned in close, confronting relationship with a child's  
15                   external genitalia, thereby absorbing and retaining urine from an enuretic void, and reducing the possibility of urine soiling the undergarment body portion, outer clothing, and/or bedding. Furthermore, the discharge-receiving panel remains in close, confronting relationship even when a child is tossing and turning during sleep, or walking or running about during the day.

20                   In one form of the invention, the discharge-receiving panel of the self-adjusting support is sized and constructed to receive a conventional absorbent pad and to keep a large portion of the pad's upper surface exposed. This particular

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version of the discharge-receiving panel includes front and back pockets and longitudinal sidewalls which serve to securely hold the pad, while at the same time leaving most of the pad's upper surface exposed, so as to be in direct confronting relationship with a child's external genitalia when the undergarment is worn. In addition, the longitudinal sidewalls tend to cradle the external genitalia, thereby further assisting in collecting and retaining urine from an enuretic discharge.

In another aspect of the invention, the length of the front panel may be different from the length of the back panel, so as to create an undergarment which is tailored to the particular sex and/or age of the child, thereby enabling the undergarment to provide optimal urine collection and retention. For example, in a girl's version of the undergarment, the front and back panels may be substantially similar in length, thereby centrally locating the discharge-receiving panel and absorbent pad within the undergarment and directly below the girl's genitalia. While in a boy's version, the front panel may be substantially shorter than the back panel, thereby positioning the discharge-receiving panel and pad more toward the front of the undergarment in confronting relationship with the boy's genitalia. Because the location of the discharge-receiving panel may be customized and optimized in this manner, it is possible to produce undergarments in which the length of the discharge-receiving panel is the same for a boy's version as it is for a girl's version. It also is possible to produce an undergarment having a relatively short discharge-receiving panel. These features have important implications for enhanced comfort and appearance, and for reduced cost. For example, because a

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relatively short discharge-receiving panel may be used, a proportionately shorter pad may be used as well, thereby giving the undergarment a more natural appearance and more comfortable feel; also, because the shorter discharge-receiving panel and shorter pad may be made with less material, they cost less to produce. In addition, because the size of the discharge-receiving panel may be the same in either a girl's or a boy's version, there is no need to make multiple pad sizes. Accordingly, a manufacturer may realize lower costs through economies of scale, and a retailer may preserve precious shelf space by having to stock only a single pad size.

The undergarment itself may be any undergarment capable of attachably receiving the self-adjusting support front and back panels and capable of maintaining the discharge-receiving panel in close, confronting relationship with a child's external genital area. Advantageously, the undergarment is a boy's brief or a girl's panty having a traditional exterior appearance, thereby assisting a child in feeling a relative sense of normalcy. Also, if a pad is used with the discharge-receiving panel, the pad may be any conventional, relatively thin, disposable or reusable absorbent pad.

By virtue of the foregoing, there is provided a convenient, aesthetically pleasing undergarment which is capable of capturing urine involuntarily discharged by a child, which is easy to make, and which does not suffer from the drawbacks of the bulky, uncomfortable and shifting pads traditionally used. For example, the discharge-receiving panel and front and back

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elasticized panels of the self-adjusting support are able to maintain a thin, absorbent pad in close, confronting relationship to a child's external genital area, thereby effectively absorbing and trapping discharged urine and preventing the body portion of the undergarment from becoming soiled, even when the child is moving around, either during the daytime or while asleep at night, ultimately resulting in an enhancement of the child's self-esteem and self-confidence. These and other objects and advantages of the present invention shall be made apparent from the accompanying drawings and description thereof.

#### **Brief Description of the Drawings**

The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention, and together with the general description of the invention given above, and the detailed description given below, serve to explain the principles of the invention.

Fig. 1A is a front, partially broken-away view of a boy's brief with a discharge-receiving panel connected to the front and back waist areas by front and back elasticized panels;

Fig. 1B is a front, partially broken-away view of a girl's panty having a discharge-receiving panel connected to the front and back waist areas of the panty by front and back elasticized panels;

Fig. 2A is an elevated view of a self-adjusting support, including front and back elasticized panels and a discharge-receiving panel therebetween;

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Fig. 2B is an elevated view of a conventional, absorbent pad for use with the enuresis undergarment;

Fig. 3A is a schematic, partial cross-sectional view of the lower torso and groin area of a boy wearing the boy's brief of Fig 1A; and

5 Fig. 3B is a schematic, partial cross-sectional view of the lower torso and groin area of a girl wearing the panty shown in Fig. 1B.

#### **Detailed Description of the Drawings**

Figs. 1A and 1B illustrate two particular versions of the undergarment 8 made according to the principles of the invention, namely, a boy's  
10 brief 10 and a girl's panty 12. Each undergarment 8 shown in these Figures includes a body portion 14 having a front section 16 and a back section 18, a top waist section 20 including a front waist area 21, a back waist area 22, and a peripheral waist opening 23, a pair of leg openings 24, and a crotch area 25 extending between the front waist area 21 and the back waist area 22 between the  
15 leg openings 24. In addition, as shown in Fig. 1A, the boy's brief 10 includes a fly 30. If desired, this fly 30 may be a cosmetic, inoperable fly, designed to give the boy's brief 10 the appearance of being a traditional undergarment. Alternatively, the boy's brief 10 may be formed with a traditional, operable fly.

With reference to Figs. 1A-2A, the undergarment 8 further includes  
20 a self-adjusting support 32 inside the undergarment body portion 14. The support 32 has a front elasticized panel 34, a back elasticized panel 36, and a discharge-receiving panel 37 therebetween, stitched to the panels 34, 36 along stitch lines 38,

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and adapted to support a conventional, absorbent pad, such as the thin, flexible, absorbent pad 52 shown in Fig. 2A. In addition, the front panel 34 is connected to the front waist area 21, and the back panel 36 is connected to the back waist area 22. Moreover, in this particular version of the invention, the self-adjusting support 32 is connected to the undergarment 8 only at the front and back waist areas 21, 22. With the exception of these connecting points, the self-adjusting support 32 is unattached to the undergarment 8, and therefore, is able to float or move about freely relative to the undergarment, so as to maintain a confronting relationship with a child's genitalia area 90, 92 (Figs. 3A and 3B).

With reference to Figs. 2A, 3A, and 3B, the discharge-receiving panel 37 includes a child-facing surface 54 and a garment-facing surface 56, as well as a front end 58, a back end 60, a front pocket 46, a back pocket 48, and a pair of longitudinal sidewalls 40 extending from the front end 58 to the back end 60. The front pocket 46 and the back pocket 48 have a non-pleated lip 70 finished with an elasticized material 44. In addition, each of the longitudinal sidewalls 40 has a leading section 72 and a trailing section 74, each of which is tacked via stitching 50 to a portion of the front and back pocket non-pleated lips 70. Also, each of the longitudinal sidewalls 40 is slightly pleated (as shown at 42) and finished with an elasticized material 44.

In this particular version of the undergarment 8, the front and back pockets 46, 48 and longitudinal sidewalls 40 of the discharge-receiving panel 37 serve to securely hold the pad 52 on the panel 37, while at the same time leaving

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most of the pad's upper surface 62 exposed and in direct confronting relationship with a child's external genital area, as at 90 and 92 in Figs. 3A and 3B, respectively. In addition, the longitudinal sidewalls 40 tend to hug the portion (not shown) of the crotch area 25 adjacent each side of the genitalia 90, 92, thereby  
5 further assisting in collecting and retaining urine from an enuretic discharge.

The discharge-receiving panel 37 includes a liquid-resistant material, with the term "liquid-resistant" referring to the ability of a particular material or combination of materials to slow, inhibit, or even prevent the transmission of a liquid through the material or combination of materials. If  
10 desired, depending upon the particular liquid-resistant material employed, the material may be coated or laminated onto another material. The particular material or materials selected may advantageously be soft, flexible, and light weight, and may possess a degree of elastic stretch. By way of example, the liquid-resistant material may be a vinyl, urethane, or polyethylene, either alone or in combination  
15 with another material. If desired, the discharge-receiving panel 37 may include a knit, woven, or non-woven fabric on one or both of a body-facing surface 54 (Figs. 3A and 3B) and a garment-facing surface 56 (Figs. 3A and 3B) of the panel 37, thereby improving wash, wear, and/or comfort. In addition, a liquid-resistant, non-woven fabric may be used, either alone or in combination with other materials, in  
20 forming the discharge-receiving panel 37.

By way of further example, the discharge-receiving panel 37 may be made of a vinyl/fabric combination in which the vinyl is extruded onto a polyester, all-

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directional, stretch-knit fabric. This vinyl/fabric material may be obtained from Ouimet, 2960 Sidco Drive, Nashville, TN 37204. Alternatively, the discharge-receiving panel 37 may be made of an embossed vinyl film. If desired, this film may be made by a casting process, in which the film is placed against a sheet of casting paper, and the two layers are run over or under an embossing roller, with the casting paper contacting the embossing roller. In this fashion, the embossing pattern is transferred through the casting paper to the vinyl film. Then the casting paper may be removed and discarded, or subsequently reused. Such a vinyl film also is available from Ouimet, 2960 Sidco Drive, Nashville, TN 37204. Also, the discharge-receiving panel 37 may be a urethane/fabric combination, in which a urethane film is laminated to a polyester, all-directional, stretch-knit fabric.

In one particular version of the undergarment, the discharge-receiving panel 37 is capable of assuming a natural, arcuate, cupping or cradle-like shape having various dimensions. When in this shape, and not being worn by a user, the support 37 has a length of about 8 ½ to about 9 inches, as measured along the elasticized material 44 of the upper, arcuate edge of each longitudinal sidewall 40. Each of the elasticized longitudinal sidewalls 40, which assists in providing the cradle-like shape, has an upstanding "height" of about ½ to about 1 inch. In addition, the front and back pockets 46, 48 have a depth of about 1 inch, and the leading and trailing sections 72, 74 of the longitudinal sidewalls 40 are tacked (as at 50) to the front and back pocket lips 70, respectively, about ½ to about 1 inch in (toward the longitudinal centerline of the panel 37) from the sides 80 located at the

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front and back ends 58, 60 of the discharge-receiving panel 37. These various dimensions assist in providing a sidewall-to-sidewall width of from about 2 ½ inches to about 3 ½ inches. While these dimensions are the dimensions of a particular version of the panel 37 when the undergarment is not being worn, it should be understood that, because of the flexible nature of the discharge-receiving panel 37, the panel 37 is capable of conforming generally to the particular size and movements of the user.

The discharge-receiving panel 37 may be made by starting with a substantially rectangular, flat piece of the desired material or materials, with the flat piece having a length of about 16 inches and a width of about 6 inches. The piece of material or materials then may be formed into the discharge-receiving panel 37 described in detail above, using traditional textile manufacturing techniques.

For the sake of illustration, Fig. 2A depicts both a boy's version and a girl's version of the self-adjusting support 32. In particular, the reference lines labeled B (for boy) illustrate one example of the front and back terminating ends 84, 85 of the front and back elasticized panels 34, 36, for the boy's brief 10. These ends 84, 85 subsequently are stitched to the front waist area 21 and back waist area 22 of the boy's brief 10, as shown in Figs. 1A and 3A. As shown in Figs. 2A and 3A, because the boy's brief 10 includes a front panel 34 which is shorter than the back panel 36, the discharge-receiving panel 37 and absorbent pad 52 are positioned toward, and, if desired, into, the front waist area 21, so as to be in close, confronting relationship with a boy's external genital area 90. For example, the

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back panel 36 may be at least about twice the length of the front panel 34, and advantageously, about two to three times the length of the front panel 34. One particular version of the brief 10 includes a front panel 34 having a length of about 1 ½ inches and a back panel 36 having a length of about 4 inches.

5 Referring back to Fig. 2A, the reference lines indicated by the letter G (for girl) denote an example of the terminating front and back ends 86, 87 of the front and back elasticized panels 34, 36 of the self-adjusting support 32 used in the girl's panty 12 shown in Figs. 1B and 3B. These ends 86, 87 then are stitched to the front waist area 21 and back waist area 22 of the panty 12. As shown in Figs.  
10 2A and 3B, the front panel 34 and back panel 36 may be substantially similar in length, thereby substantially positioning the discharge-receiving panel 37 and absorbent pad 52 centrally in the crotch area 25. This positioning keeps the discharge-receiving panel 37 and pad 52 in close, confronting relationship to the girl's external genital area 92, thereby providing maximum effectiveness in  
15 absorbing and retaining discharged urine. By way of further example, the back panel 36 may advantageously have a length which is less than about twice the length of the front panel 34. One particular version of the panty 12 includes a front panel 34 length of about 1½ inches and a back panel 36 length of about 2 ½ inches.

The fabric used for the front and back elasticized panels 34, 36  
20 shown in Figs. 1-3 may be any fabric having some degree of elastic stretch. For example, the fabric may be a cotton/polyester blend, either with or without Lycra® spandex. Alternatively, the fabric may be a nylon, a nylon blend, or Lycra®

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spandex. The elasticized panel may be a knit, woven, nonwoven, or film, and if a knit fabric is used, the knit may be, for example, a jersey knit, interlock, or warp knit. In addition, if yarns are used, the yarns may suitably be filament or spun yarns. The particular material or materials used may advantageously have both vertical and horizontal elastic stretch, capable of maximum stretch and recovery. Also, the material or materials used for the front and back elasticized panels 34, 36 may be water repellant or absorbent, as will be readily understood by one of ordinary skill in the art. The front and back elasticized panels 34, 36 may be connected to the discharge-receiving panel 37 and front and back waist areas 24, 26 using any conventional method or methods. For example, the panels 34, 36 may be sewn, fused or snapped to the panel 37 and waist areas 24, 26.

The body portion 14 of the undergarment may be formed of any suitable material or combination of materials. However, because one purpose of the invention is to provide an undergarment which looks and feels as natural and traditional as possible, the body portion 14 advantageously may be made of a cotton-rich blend, containing at least about 50 percent cotton, thereby providing the look and feel of a traditional boy's brief or girl's panty. If desired, the cotton-rich blend may be formed using a nylon and/or Lycra® spandex. Non-limiting examples of other suitable materials include any natural or synthetic material, such as cotton, nylon, polyester, or Lycra® spandex, for example, either as a homogeneous material or in the form of a blend. In addition, the yarns themselves may be regular yarns, microdenier yarns, spun yarns, or filament yarns, or various

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combinations thereof. And if desired, Lycra® spandex or some other elasticized material may be incorporated into the fabric used for the undergarment body. The undergarment body itself may be formed using conventional fabric weaves, knits, cutting, sewing, and stitching techniques.

5                   In order to achieve the goal of an undergarment having a traditional appearance, while at the same time absorbing and retaining a urinary discharge, the absorbent pad may be a conventional thin, soft, flexible pad made of disposable materials, such as shown in Fig. 2B, so that the pad may be easily removed and properly discarded after a void or series of voids. One particular version of the pad  
10                   may have a length of about 9 inches, a width of about 4 inches, and a thickness of about 3/8 inch. In addition, the discharge-receiving panel 37 is designed to accommodate virtually any thin, soft, flexible disposable or reusable pad, either of which may be made using traditional materials and methods.

                  In using the undergarment 8 of the present invention, a parent or  
15                   child releasably secures a thin, soft absorbent pad 52 on the flexible, thin discharge-receiving panel 37 which is suspended from the front and back waist areas 21, 22 by the front and back elasticized panels 34, 36. The parent or child then pulls the peripheral waist opening 23 of the undergarment 8 up around the child's waist. Because of the design of the discharge-receiving panel 37 and the front and back  
20                   elasticized panels 34, 36, the undergarment 8 maintains the absorbent pad 52 and discharge-receiving panel 37 in close, confronting relationship to the child's external genital area 90, 92, whether the child is stationary or is actively moving

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about, thereby absorbing urine from an enuretic void and preventing the urine from soiling the body portion 14 of the undergarment 8, as well as outer garments and/or bedding. In addition, because the self-adjusting support 32 and pad 52 are relatively thin and flexible, the invention provides a natural-looking undergarment 8 which assists a child in managing urinary incontinence in a way which enhances the child's self-esteem.

While the present invention has been illustrated by this description of embodiments, and while the illustrative embodiments have been described in considerable detail, it is not the intention of the inventor to restrict or in any way limit the scope of the appended claim to such detail. Additional advantages and modifications will readily appear to those skilled in the art. For example, the body portion of the undergarment may be made of a material or blend having a substantial amount of an elastic material, thereby allowing that particular undergarment to accommodate children of many different shapes and sizes, while still maintaining the discharge-receiving panel and pad in close, confronting relationship to the particular child's external genital area, due, in large part, to the elastic nature of the front and back panels. The invention, in its broader aspects, is therefore not limited to the specific details, representative apparatus and methods, and illustrative examples shown and described. Accordingly, departures may be made from such details without departing from the spirit and scope of the general inventive concept.

Having described the invention, what is claimed is:

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1. A child's enuresis undergarment comprising a child's undergarment body portion (14) having a front section (16), a back section (18), a waist section (20) including a front waist area (21), a back waist area (22), and a peripheral waist opening (23), a pair of leg openings (24), and a crotch area (25) extending between the front waist area (21) and the back waist area (22) between the leg openings (24); and a support (32) inside the undergarment body portion (14), the support (32) having a front elasticized panel (34), a back elasticized panel (36), and a discharge-receiving panel (37) therebetween, characterised in that the front elasticized panel (34) is connected to the front waist area (21), and the back elasticized panel (36) is connected to the back waist area (22), and further characterised in that for a boy's version of the undergarment, the front elasticized panel (34) is shorter than the back elasticized panel (36) so as to locate at least a part of the discharge-receiving panel (37) forwardly in the crotch area (25), and for a girl's version of the undergarment, the front elasticized panel (34) and back elasticized panel (36) are substantially equal in length so as to locate at least a part of the discharge-receiving panel (37) generally centrally in the crotch area (25).

2. A child's enuresis undergarment comprising a child's undergarment body portion (14) having a front section (16), a back section (18), a waist section (20) including a front waist area (21), a back waist area (22), and a  
5 peripheral waist opening (23), a pair of leg openings (24), and a crotch area (25) extending between the front waist area (21) and the back waist area (22) between the leg openings (24); and a support (32) inside the undergarment body portion (14), the support (32) having a front elasticized panel (34), a back elasticized panel (36), and a discharge-receiving panel (37) therebetween,  
10 characterised in that the front elasticized panel (34) is connected to the front waist area (21), and the back elasticized panel (36) is connected to the back waist area (22), and further characterized in that the discharge-receiving panel (37) is suspended or floats within the undergarment body portion (14).

15 3. The child's enuresis undergarment as claimed in Claim 1 wherein the boy's version is a boy's brief and the girl's version is a girl's panty.

4. The child's enuresis undergarment as claimed in Claims 1 or 3 for a boy's version, or as claimed in Claim 2, wherein the back elasticized panel (34)  
20 is about twice as long as the front elasticized panel (36), thereby locating at least a portion of the discharge-receiving panel (37) forwardly in the crotch area (25).

5. The child's enuresis undergarment as claimed in Claims 1 or 3 for a boy's version, or as claimed in Claim 2, wherein the back elasticized panel (34) is about two to three times as long as the front elasticized panel (36), thereby locating at least a portion of the discharge-receiving panel (37) forwardly in the crotch area (25).

6. The child's enuresis undergarment as claimed in Claims 1 or 3 for a girl's version, or as claimed in Claim 2, wherein the back elasticized panel (36) has a length which is less than about twice the length of the front elasticized panel (34).

7. The child's enuresis undergarment as claimed in any preceding Claim wherein the child's undergarment body portion (14) includes an elasticized material, thereby enabling the undergarment body portion to conform to children of various shapes and sizes.

8. The child's enuresis undergarment as claimed in any preceding Claim wherein the discharge-receiving panel (37) includes a child-facing surface (54), an oppositely disposed garment-facing surface (56), a front end (58) oriented toward the front elasticized panel (34), and a back end (60) oriented toward the back elasticized panel (36).

9. The child's enuresis undergarment as claimed in any preceding Claim wherein the discharge-receiving panel (37) includes a front pocket (46) capable of receiving a first portion of an absorbent pad (52).

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10. The child's enuresis undergarment as claimed in Claim 9 wherein the discharge-receiving panel (37) further includes a back pocket (48) capable of receiving a second portion of an absorbent pad (52).

10

11. The child's enuresis undergarment as claimed in any preceding Claim wherein the discharge-receiving panel (37) includes a first longitudinal sidewall (40) extending along at least a portion of a first side (80) of the discharge-receiving panel (37).

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12. The child's enuresis undergarment as claimed in Claim 12 when dependent on Claim 8 wherein the first longitudinal sidewall (40) extends from the front end (58) to the back-end (60).

20

13. The child's enuresis undergarment as claimed in Claim 11 or Claim 12 wherein at least a portion of the first longitudinal sidewall (40) extends upward in a child-facing orientation, thereby enabling at least the portion of the first longitudinal sidewall (40) to cup or cradle a child's external genitalia (90, 92).

- 21 -

14. The child's enuresis undergarment as claimed in any of Claims 11 through 13 wherein the discharge- receiving panel (37) further includes a second longitudinal sidewall (40) extending along at least a portion of a second side (80) of the discharge-receiving panel (37).

5

15. The child's enuresis undergarment as claimed in any preceding Claim wherein the discharge- receiving panel (37) is connected directly to the front elasticized panel (34) and the back elasticized panel (36).

10

16. The child's enuresis undergarment as claimed in any preceding Claim wherein the discharge-receiving panel (37) includes a material which at least resists the passage of liquid from a child-facing surface (54) of the panel (37) to an oppositely disposed garment-facing surface (56) of the panel (37).

15

17. The child's enuresis undergarment as claimed in any preceding Claim further characterised in that the support (32) is self-adjusting.

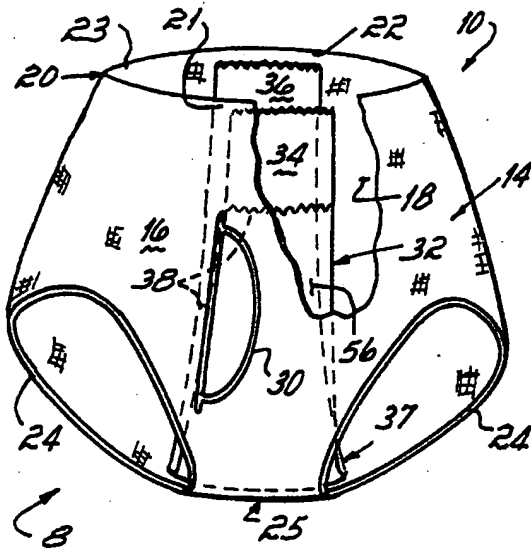


FIG. 1A

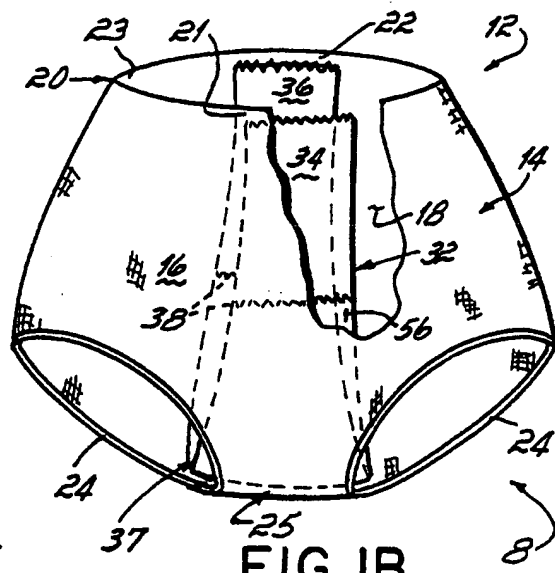


FIG. 1B

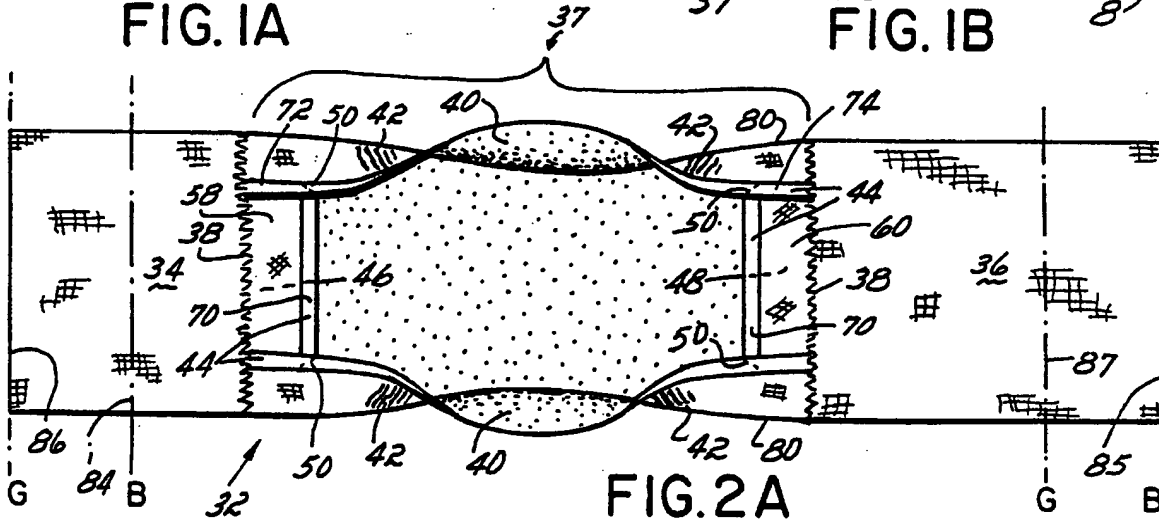


FIG. 2A

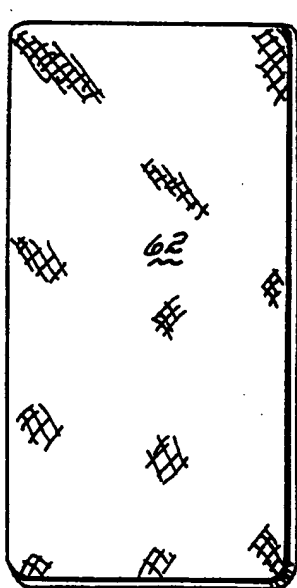


FIG. 2B

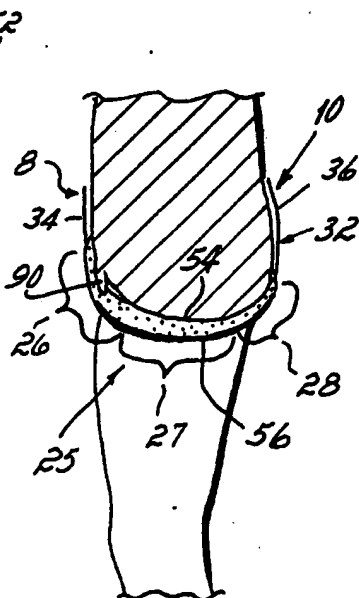


FIG. 3A

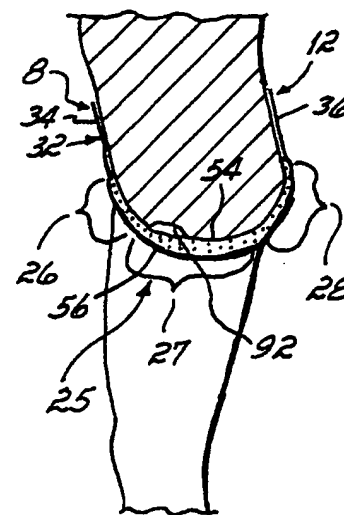


FIG. 3B

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 98/26131

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61F13/15

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 669 982 A (SIVILICH DANIEL M) 23 September 1997 see figures 3-5  see column 2, line 65 - column 3, line 35 see claims 1,2  ---	2  1,3-5, 7-10, 15-17
A	EP 0 667 136 A (CARING PRODUCTS INT) 16 August 1995 see figures 1-3 see column 2, line 21 - column 3, line 2 see column 3, line 22 - line 44 see column 4, line 11 - line 43  ---	1,2,6-8, 11-16
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "B" earlier document but published on or after the international filing date
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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"A" document member of the same patent family

Date of the actual completion of the international search

15 June 1999

Date of mailing of the international search report

21 06 1999

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# INTERNATIONAL SEARCH REPORT

In: tional Application No  
PCT/US 98/26131

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 95 10992 A (LEE PETER H T) 27 April 1995 see abstract see figure 1 see page 10, line 21 - page 11, line 12 see page 12, paragraph 2 - page 13, paragraph 2 see claim 1</p> <p>---</p>	1,2,8, 11,13-15
A	<p>US 3 968 798 A (HOKANSON KENNETH C) 13 July 1976 see figure 1 see column 1, line 58 - column 2, line 36</p> <p>---</p>	1-3,9,10
A	<p>US 3 489 149 A (LARSON PHYLLIS MARION) 13 January 1970 see figures 1,3 see column 2, line 8 - column 3, line 2</p> <p>---</p>	1-3,10
A	<p>US 4 338 938 A (SEAVITT SUSAN A) 13 July 1982 see figure 8 see claim 1 see column 3, line 21 - line 53</p> <p>-----</p>	1,2,6,15

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/26131

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5669902 A	23-09-1997	CA 2197147 A	25-12-1997
EP 0667136 A	16-08-1995	CA 2140393 A	19-07-1995
WO 9510992 A	27-04-1995	AU 5147393 A	08-05-1995
US 3968798 A	13-07-1976	NONE	
US 3489149 A	13-01-1970	NONE	
US 4338938 A	13-07-1982	NONE	